Science
Wahr

CONTENTS

AMERICAN ASSOCIATION OF ECONOMIC ENTOMOLOGISTS, FORTY-FIFTH ANNUAL MEETING, PROCEEDINGS 1
APICULTURE SECTION 155
COTTON STATES BRANCH, PROCEEDINGS, EIGHTH ANNUAL MEETING 931
CURRENT NOTES 309, 520, 743, 923, 1003, 1189
EASTERN BRANCH, BUSINESS SESSION 377
EDITORIAL 305, 518, 737, 919, 1001, 1184
EXTENSION SECTION 668
HORTICULTURAL INSPECTION NOTES 310, 520, 745, 925, 1005, 1190
LIST OF MEMBERS xi
MEDICAL ENTOMOLOGY 312
OBITUARY
FRED E. BROOKS 742
SHINKAI INOKICHI KUWANA 1185
ALONZO WILLIAM LOPEZ 306
RAYMOND LOUIS NOUGARET 739
CLARENCE RITCHIE PHIPPS 920
OFFICERS ix
PACIFIC SLOPE BRANCH, PROCEEDINGS 1009
PLANT QUARANTINE AND INSPECTION 595
REVIEWS 308
SCIENTIFIC NOTES 291, 509, 730, 910, 977, 974, 995, 1171
PAPERS

ALLEN, T. C. and FLUKE, C. L. Notes on the Life History of the Apple Maggot in Wisconsin 1108
BEATTIE, R. KENT. Diseases Threatening Ornamental and Forest Trees 621
BAILEY, STANLEY F. A Contribution to the Knowledge of the Western Flower Thrips, *Frankliniella californica* Moulton 836
BARRETT, R. E. A General Method for Measuring Insect Populations and Its Application in Evaluating Results of Codling Moth Control 873
BEDARD, W. D. The Number of Larval Instars and the Approximate Length of the Larval Stadia of *Dendroctonus pseudotsugae* Hopk., with a Method for their Determination in Relation to Other Bark Beetles 1128
BELL, R. H. Status of Potato Wart in 1932 649
BORDEN, ARTHUR D. Efficient Agitation in the Spray Tank 1106
BOYCE, A. M. Influence of Host Resistance and Temperature During Dormancy Upon Seasonal History of the Walnut Husk Fly, *Rhagoletis completa* 813
Control of the Walnut Husk Fly, *Rhagoletis completa* Clem. 819
BRINDLEY, T. A. Some Notes on the Biology of the Pea Weevil, *Bruchus pisorum* L. at Moscow, Idaho 1058
BRITTON, W. E. Experience in Enforcing Compulsory Clean-up Regulations on Account of the European Corn Borer 604
BURDETTE, ROBERT C. Vegetable Insect Scouting in New Jersey 672
BURGESS, A. F. The Present Status of the Gipsy Moth 598
BURNSIDE, C. E. Preliminary Observations on "Paralysis" of Honeybees 162
BUTLER, H. G. Larval Parasites of the Oriental Fruit Moth in Roane County, Tennessee 982
CAFFREY, D. J. and WORTHLEY, L. H. The European Corn Borer Situation in the United States at the Close of 1932 85

CALHOUN, P. W. Irregularity among Cotton Plants in Time of Fruiting as a Factor Affecting Susceptibility to Damage by the Cotton Boll Weevil 1125
CAMPBELL, F. L., SULLIVAN, W. N. and SMITH, C. R. The Relative Toxicity of Nicotine, Anabasine, Methyl Anabasine and Lupinine for Culicine Mosquito Larvae 500
CARTER, R. H., and NEWCOMER, E. J. Arsenical Residues Found on Apples in the Pacific Northwest Throughout a Season of Typical Spraying with Lead Arsenate 572
CHAMBERLIN, F. S. Barium Fluosilicate as a Control for the Tobacco Flea Beetle 233
CLAASSEN, P. W. *Draeculacephala mollipes* Say, A Cicadellid Pest of Apples 282
COLE, F. R. Natural Control of the Citrus Mealybug 866
COLLINS, C. W. The Oriental Moth, *Cnidocampa flavescens* Walk., in Massachusetts and the Work of its Newly Introduced Parasite 54
CRESSMAN, A. W. Biology and Control of *Chrysomphalus dictyospermi* 696
CRUMB, S. E. and CHAMBERLIN, F. S. A Comparison of the Effectiveness of Sustained Vacuum and Dissipated Vacuum in Fumigation with Hydrocyanic Acid Gas 259
CUPPLES, H. L. A Consideration of "Interval Shooting" as Practiced in Citrus Fumigation 262
CUTRIGHT, C. R. and DIETZ, H. F. The Technique of Codling Moth Field Experiments 392
CUTRIGHT, C. R. and HOUSER, J. S. Experimental Results in Codling Moth Control with Late Summer Applications 380
DAVIS, J. J. Justifying Expenditures for Entomological Research 72
Course in Insecticides for Pharmacists 687
DIBBLE, C. B. Fumigation with Propylene Dichloride Mixture Against *Pyrausta nubilalis* Hubn. 893
DITMAN, L. P. and CORY, E. N. The Response of Corn Earworm Moths to Various Sugar Solutions 109
DRAKE, C. J., TATE, H. D. and HARRIS, H. M. The Relationship of Aphids to the Transmission of Yellow Dwarf of Onions 841
DRIGGERS, BYRLEY F. Fruit Injury on Apples Following Nicotine Tannate Sprays 1137
EBELING, WALTER Variation in the Population Density of the California Red Scale, *Aonidiella aurantii* Mask., in a Hilly Lemon Grove 851
ECKER, J. E. Buckeye Poisoning of the Honeybee, A Progress Report 181
ELMORE, J. C. Some Tests with Fluorine Compounds Against the Pepper Weevil, *Anthonomus eugenii* Cano 1095
ENGLISH, L. L. and TURNIPSEED, G. F. A Method for Timing Sprays for the Control of Scale Insects on Citrus 987
ESSIG, E. O. Farm Machinery in Relation to Insect Pest Control 864
Insects and Agriculture 869
EWING, K. P. and MCGARR, R. L. The Effect of Certain Homopterous Insects as Compared with Three Common Mirids upon the Growth and Fruiting of Cotton Plants 943
EYER, J. R. and CRAWFORD, R. F. Observations on the Feeding Habits of the Potato Psyllid, *Paratrioza cockerelli* Sulc. and the Pathological History of the "Psyllid Yellows" which It Produces 846
FARLEMAN, M. G. Observations on the Habits of Flies Belonging to the Genus Rhagoletis 825
FARRAR, M. D., and FLINT, W. P. Chemically Treated Bands 364
FAURE, JACOBUS C. The Phases of the Rocky Mountain Locust, *Melanoplus mexicanus* 706
FELT, E. P. Observations on Shade Tree Insects 45
FICHT, G. A. A Progress Report on Some Insecticides Used Against the European Corn Borer 747
FLETCHER, ROBERT K. Experiments in the Control of the Corn Earworm, *Heliothis obsoleta* Fabr. with *Trichogramma minutum* Riley 978
FLEURY, A. C. Report of the Western Plant Quarantine Board 610
FLINT, W. P. Balancing the Entomological Program 39

FOLSOM, J. W. The Economic Importance of Collembola 934
FRACKER, S. B. and SHEALS, R. A. The Protection of Forest Nurseries from White-Pine-Blister Rust Infection 641
FRANKENFELD, J. C. and BARNES, O. L. The Equipment and Methods in Rearing the New Mexico Range Caterpillar Parasite, *Anastatus semiflavus* Gahan 799
FRIEND, R. B. and HICOCK, H. W. The Status of the European Pine Shoot Moth in Connecticut 57
FROST, S. W. Summer Oil Emulsions Against the Oriental Fruit Moth and Other Insects 334
GAINES, J. C. Reliability of Differences Between Data Obtained in Cotton Insect Investigations 274
Progress Report on the Development of the Boll Weevil on Plants Other Than Cotton 940
Factors Influencing the Activities of the Cotton Bollworm Moth, *Heliothis obsoleta* Fabr. 957
A Study of the Cotton Flea Hopper with Special Reference to the Spring Emergence, Dispersal and Population 963
GARMAN, PHILIP Notes on Breeding *Macrocentrus ancylivorus* from Reared Hosts 330
GILMORE, J. U. and MILAM, JOE Tartar Emetic as a Poison for the Tobacco Hornworm Moths, A Preliminary Report 227
GINSBURG, JOSEPH M. Compatability of Oil Emulsion-Cresylic Acid Sprays with Fungicides 566
GLASGOW, HUGH The Host Relations of Our Cherry Fruit Flies 431
GRISWOLD, GRACE A. Fish Meal as a Food for Clothes Moths 720
HALLOCK, HAROLD C. Present Status of Two Asiatic Beetles, *Anomala orientalis* and *Autoserica castanea*, in the United States 80
HAMILTON, CLYDE C. Greenhouse and Field Tests for the Control of the Gladiolus Thrips, *Taeniothrips gladioli* 555
HAMMER, O. H. Further Studies on the Control of the Apple Curculio in the Champlain Valley 420
HARTZELL, ALBERT A Visit to Pyrethrum Fields of Dalmatia 583
HARTZELL, F. Z. Tests with Tar Distillate Sprays for Foliage Applications 480
HARTZELL, F. Z., PARROTT, P. J. and HARMAN, S. W. Experiments with Tar Distillate Sprays Against Fruit Aphids and Associated Insects 474
HEADLEE, THOMAS J. The Effect of Radio Waves on Internal Temperatures of Certain Insects 313
Application of Horse Sense to Plant Quarantines 606
Directory of Manufacturers of Insecticides, Their Products and Analyses 689
HERBERT, FRANK B. Airplane Liquid Spraying 1052
HERRICK, GLENN W. and GRISWOLD, GRACE C. Naphthalene as a Fumigant for the Immature Stages of Clothes Moths and Carpet Beetles 446
HILL, L. L. Further Studies of Tarnished Plant Bug Injury to Celery 148
HILLS, ORIN A. A New Method for Collecting Samples of Insect Populations 906
HINDS, W. E., OSTERBERGER, B. A. and DUGAS, A. L. Sugar Cane Borer Control by Trichogramma Colonization in Louisiana 758
HINDS, W. E. and OSTERBERGER, B. A. Sugar cane Borer Effect upon the Value of Seed Cane 972
HOCKENYOS, GEORGE L. Effects of Dusts on the Oriental Roach 792
The Mechansim of Absorption of Sodium Fluoride by Roaches 1162
HOLLOWAY, J. K. Shipping Adult Parasites in Refrigerated Containers 280
HOLLOWAY, T. E. A Method of Avoiding the Destruction of Trichogramma in Sugarcane Fields 974
HOPKINS, G. O. 4-H Club Work and Entomology 683
HOUGH, W. S. The Efficiency of Tar Distillate Sprays in Controlling San Jose Scale in 1932 470
HOWARD, NEALE F., BRANNON, L. W. and MASON, H. C. Insecticides for the Control of the Mexican Bean Beetle 123
HUBER, L. L. and POLIVKA, J. B. Some Ecological Aspects of European Corn Borer Abundance 755

HUTSON, RAY Experiments on the Control of Mites Infesting Raspberries 425
HYSLOP, J. A. Insect Pests 692
JEWETT, H. H. The Resistance of Leaves of Red Clover to Puncturing 1135
JONES, E. W. The Influence of Temperature on the Toxicity of Carbon Disulphide to Wireworms 887
JONES, GEORGE D. Entomology in 4-H Clubs—at Camps 680
JONES, HOWARD A., GERSDORFF, W. A., GOODEN, E. L., CAMPBELL, F. L. and SULLIVAN, W. N. Loss in Toxicity of Deposits of Rotenone and Related Materials Exposed to Light 451
JONES, R. M. A Precise Method for Determining the Toxicity of Mixed Gases to Insects 895
KNOWLTON, G. F. and JANES, M. J. Lizards as Predators of the Beet Leafhopper 1011
LANGFORD, GEORGE S. Observations on Cultural Practices for the Control of the Potato Tuber Worm, *Phthorimaea operculella* Zell. 135
LARSON, A. O., BRINDLEY, T. A. and HINMAN, FRANK G. Local Dispersal of the Pea Weevil 1063
LEHMAN, RUSSELL S. Field Experiments with Various Poison Baits against Wireworms, *Limonius (Pheletes) canus* Lec. 243
Laboratory Experiments with Various Fumigants against the Wireworm, *Limonius californicus* Mann. 1042
LEONARD, M. D. Notes on the Giant Toad, *Bufo marinus* L., in Puerto Rico 67
LILLY, J. H. and FLUKE, C. L. New Developments in the Control of the Cherry Case Bearer, *Coleophora pruniella* Clem., in Wisconsin 805
LIST, GEORGE M. The Net Gain During the Last Decade in Codling Moth Information as Indicated by Experience under Conditions Especially Favorable to the Insect 373
LYLE, CLAY The Advantages of Concentrated State Entomological Work with especial Reference to the Regulatory and Extension Phases 695
Sugarcane Beetle Injury to Greenhouse Roses 973
MACLEOD, G. F. Some Examples of Varietal Resistance of Plants to Insect Attack 62
MAIL, G. ALLEN and SALT, R. W. Temperature as a Possible Limiting Factor in the Northern Spread of the Colorado Potato Beetle 1068
MARVIN, G. E. Nectar Secretion of the Tuliptree or Yellow Poplar 170
MAUGHAN, FRANK B. Naphthalene for the Control of the Onion Thrips 143
MCALISTER, L. C. Results of Dusting Experiments to Control the Blueberry Maggot 221
MCCUBBIN, W. A. The Lima Bean Scab Situation 625
MCDANIEL, E. I. Spraying to Control the Gladiolus Thrips, *Taeniothrips gladioli* M. & S., in Michigan for the Season of 1932 835
MCGARR, R. L. Damage to the Cotton Plant Caused by *Megalopsallus atriplicis* Kngt. and Other Species of Mirids 953
MEIER, F. C. The Stem Rust Control Program 653
MERRITT, J. M. Oriental Fruit Moth Parasites in Michigan 788
MERRITT, J. M., DIBBLE, C. B. and ROBEY, O. E. A Method of Rapidly Applying Liquid Soil Insecticides 580
METZGER, F. W. Preliminary Report on Controlling the Winter Emergence of the Japanese Beetle in Rose Greenhouses by the Application of Chemicals to the Soil 205
Preliminary Tests with Liquid Bait in Japanese Beetle Traps 411
MOORE, WILLIAM Studies of the "Resistant" California Red Scale, *Aonidiella aurantii* Mask., in California 1140
MOORE, WARREN A New Development in the Fixation of Nicotine 723
MOROFSKY, W. F. Distribution of May-Beetles (Phyllophaga) in Michigan 831
NEWCOMER, E. J., ROLFS, A. R. and DEAN, F. P. A Practical Test of Chemically Treated Bands for the Control of the Codling Moth 1056
NEWCOMER, E. J. and CARTER, R. H. Caseine Ammonia, a Practical Emulsifying Agent for the Preparation of Oil Emulsions by Orchardists 880
NORTH, H. F. A. and THOMPSON, G. A. Investigations Regarding Bluegrass Webworms in Turf 1117

PADDOCK, F. B. Further Notes on the Bee Moth 177
PARK, O. W. Studies of the Rate at Which Honeybees Ripen Honey 188
PARKER, J. R. The 1932 Grasshopper Outbreak 102
PARKER, WILLIAM B. Vapo-Dust—A Development in Scientific Pest Control 718
PARROTT, P. J. The Codling Moth in New York 358
PATCH, L. H. and PEIRCE, L. L. Laboratory Production of Clusters of European Corn Borer Eggs for Use in Hand Infestation of Corn 196
PEARSON, ALLEN M. and RICHARDSON, CHARLES H. The Relative Toxicity of Trisodium Arsenite and Arsenious Acid to the House Fly, *Musca domestica* L. 486
PEARSON, A. M., WILSON, J. L. and RICHARDSON, C. H. Some Methods Used in Testing Cattle Fly Sprays 269
PHILLIPS, E. F. The New Beekeeping 155
PHIPPS, C. R. and DIRKS, C. O. Dispersal of the Apple Maggot—1932 Studies 344
Notes on the Biology of the Apple Maggot 349
PRICE, W. A. Address of the Chairman 595
QUAYLE, H. J. New Quarters for Work in Entomology in the University of California at Riverside and Los Angeles 288
RICE, PAUL A. Insects Collected in Flight Traps in the Vicinity of Moscow, Idaho 1079
RICHARDSON, CHARLES H. and THURBER, GEORGE A. Further Studies on the Relative Toxicity of Poisons for Grasshopper Baits 494
RICHARDSON, HENRY H. Extractive Efficiency of Kerosene on Pyrethrum Powders of Varying Fineness 252
RICHARDSON, HENRY H. and NELSON, R. H. Field Control of the Gladiolus Thrips, *Taeniothrips gladioli* 546
RICHMOND, R. G. Efficiency and Economy in Apiary Inspection 194
ROARK, R. C. The Chemical Relationship Between Certain Insecticidal Species of Fabaceous Plants 587
SATTERTHWAIT, A. F. Life History and Distribution of the Low-Tide Bill-bug, *Calendra setigera* Chittenden 210
SCHOENE, W. J. Spray Tests for the White Apple Leafhopper 325
SCHREAD, JOHN C. Methods of Breeding Trichogramma in Connecticut 402
SHERMAN, FRANKLIN III. Summary of Three Years' Experiments on the Contol of Codling Moth in Southwestern Michigan 383
SHROPSHIRE, L. H. Spray Service for Vegetable Crops 675
SHULL, W. EARL The Identity of Two Lygus Pests 1076
SHULL, W. EARL and RICE, PAUL L. A Method for Temporary Inhibition of Coagulation of the Blood of Insects 1083
SIEGLER, E. H. and MUNGER, FRANCIS A Field and Laboratory Technique for Toxicological Studies of the Codling Moth 438
SMITH, FLOYD F. and RICHARDSON, HENRY H. Preliminary Report on the Control of the Gladiolus Thips on Corms in Storage 536
SMYTH, E. GRAYWOOD Technique in the Mass Production of Trichogramma 768
SPIES, JOSEPH R. The Toxicity of Certain Plant Extracts to Goldfish. II 285
SPRUIJT, F. J. and BLANTON, F. S. Vapor-Heat Treatment for the Control of Bulb Pests and its Effect Upon the Growth of Narcissus Bulbs 613
STEAR, J. R. Investigation of Naphthalene as a Fumigant Against the Peach Tree Borer, *Aegeria exitiosa* Say and Sod Insects, A Progress Report 903
STEARNS, L. A. Observations on the Biology and Control of *Metriona bivittata* Say 151
STEINER, L. F. and YETTER, W. P. Second Report on the Efficiency of Bait Traps for the Oriental Fruit Moth as Indicated by the Release and Capture of Marked Adults 774
STONE, M. W. and CAMPBELL, ROY E. Chloropicrin as a Soil Insecticide for Wireworms 237
SUMMERS, J. N. and BURGESS, A. F. A Method of Determining Losses to Forests Caused by Defoliation 51
PRATT, F. S., SWAIN, A. F. and ELDRED, D. N. Study of Auxilliary Gases for Increasing the Toxicity of Hydrocyanic Gas 1031

SWAIN, A. F. and GREEN, DON Detection and Determination of Surface Oil on Citrus Following Spraying 1021
SWEETMAN, HARVEY L. Ecological Studies in Relation to the Distribution and Abundance of Economic Pests 320
THOMAS, C. A. Observations on the Tomato Pin Worm, *Gnorimoschema lycopersicella* Busck, and the Egg Plant Leaf Miner, *G. glochinella* Zell., in Pennsylvania 137
THOMPSON, B. G. and WONG, KWAN LUN Western Willow Tingid, *Corythucha salicata* Gibson, in Oregon 1090
THOMPSON, F. M. and WORTHLEY, H. N. Field Studies with Pine Oils as Destroyers of Overwintering Codling Moth Larvae 1112
TURNER, NEELY and FRIEND, ROGER B. Cultural Practices in Relation to Mexican Bean Beetle Control 115
TURNER, WILLIAM F. Progress in Phony Peach Disease Eradication 659
ULMAN, P. T. Report of the Central States Plant Board 610
VANSELL, G. H. and WATKINS, W. G. A Plant Poisonous to Adult Bees 168
WALKER, HARRY G. Notes on Extension Work at the Virginia Truck Experiment Station 677
WALKER, HARRY G. and ANDERSON, LAUREN D. Report on the Control of the Harlequin Bug, *Murgantia histrionica* Hahn, with Notes on the Severity of an Outbreak of the Insect in 1932 129
WALTHER, ERIC A Practical Method of Controlling *Dendroctonus valens* Lec. 828
WEBER, ALBERT L. and MCLEAN, HARRY C. The Removal of Lead and Arsenic Spray Residues from Apples 727
WEBSTER, R. L. Insect Tolerance 1016
WEIGEL, C. A. and SMITH, FLOYD F. Present Status of the Gladiolus Thrips in the United States 523
WHITCOMB, W. D. Relation of Temperature to the Development of the Plum Curculio in Apples 415
WHITE, RICHARD P. The Insects and Diseases of Rhododendron and Azalea 631
WILDERMUTH, V. L. and FRANKENFELD, J. C. The New Mexico Range Caterpillar and Its Natural Control 794
WORTHINGTON, A. D. and PEARSON, A. M. The Role of the Extension Service in Combating Grasshoppers 668
WORTHLEY, L. H. and STOCKWELL, C. W. Economic Status of the Japanese Beetle in 1932 405
YATES, WILLARD W. A Study of the Effect of Accessory Substances on the Adherence of Lime Sulfur Spray to the Integuments of Pine Leaf Scale, *Chionaspis pinifoliae* Fitch 989
YORK, H. H. Some Observations on *Hylobius pales* Herbst 218